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# SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE • NOVEMBER 23, 1946



Family Special

See Page 326

A SCIENCE SERVICE PUBLICATION

TWENTY-FIFTH ANNIVERSARY

1946



RCA Victor "Eye Witness" television receiver shown above, gives you 52 square inches of picture brilliance.

## ***A referee's eye view of every play — by Television!***

You feel as though you were right there at the game—when you see it through RCA's brilliant television.

Football fans as far as 250 miles away from the stadium have enjoyed watching many of the big games this fall through NBC telecasts. And football fans become television fans when they see how closely the camera follows the ball.

At the game, the sensitive RCA Image Orthicon television camera sees every line plunge, kick, pass and run. It may be a cloudy day or the sun may go down but you still enjoy the *bright sharpness* of the RCA Image Orthicon camera.

On the screen of your RCA Victor home television receiver none of that bright sharpness is lost. For after you've tuned in the game, the new RCA Victor "Eye Witness" Picture Synchronizer automatically "locks" the picture in tune with the sending station—eliminates any distortion—assures you of *clearer, steadier* pictures.

For television at its best, as pioneered at RCA Laboratories, you'll want the receiver that features the most famous name in television today—RCA Victor.

Radio Corporation of America, RCA Building, Radio City, New York 20 . . . Listen to The RCA Victor Show, Sundays, 2:00 P. M., Eastern Standard Time, over the NBC Network.



**RCA Image Orthicon television camera**—developed at RCA Laboratories—makes close-ups out of long shots. It enables television to go anywhere by freeing it from the need for strong lights or sunshine.



**RADIO CORPORATION of AMERICA**

PHYSICS-CHEMISTRY

# All Nobelists American

Dr. P. W. Bridgman won the physics award; the chemistry award went one half to Dr. J. B. Sumner, and the other half to Drs. W. M. Stanley and J. H. Northrop.

► AMERICAN scientists have scored a clean sweep of the world's highest honors in physics, chemistry and medicine and physiology by winning all three of the Nobel prize awards in science for 1946.

Dr. P. W. Bridgman of Harvard University won the physics award, while Dr. J. B. Sumner of Cornell University was awarded half of the prize in chemistry and Drs. W. M. Stanley and J. H. Northrop of the Rockefeller Institute for Medical Research, Princeton, N. J., shared the other half. These winners were announced following the earlier award in medicine and physiology to Dr. Hermann J. Muller of Indiana University. (See *SNL*, Nov. 9, 1946.) Germany, which swept the Nobel scientific honors in 1905, is the only other country to take all three prizes for a single year in the 46 years of the awards.

Enormous pressures, measured in millions of pounds per square inch, were what won Prof. Bridgman the Nobel prize in physics. Except for their lower temperatures, they approach conditions prevailing in the deep interior of the earth, and give us some idea of strange states in which ordinary matter may exist at a thousand miles straight down.

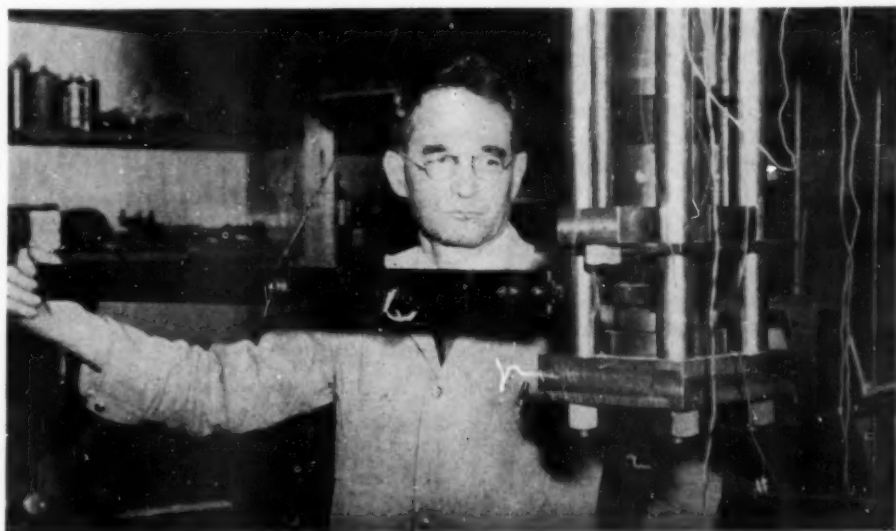
"Hot ice", or solid water 163 degrees Fahrenheit above ordinary boiling point, was produced in one of his massive presses, which can build pressure up to as much as six million pounds per square inch. This strange form of water is denser than ordinary ice, and will sink in water. In another of his experiments, Dr. Bridgman showed it to be highly unlikely that diamond can be formed from carbon by pressure alone.

Dr. Stanley will receive part of the Nobel prize in chemistry for researches on the borderline of life. He showed that the filterable viruses that cause such plant diseases as tobacco mosaic and aster yellows are not living organisms like ordinary bacteria, but non-living, crystallizable proteins with huge and complex molecules that in many respects behave as if they were alive.

Colleague of Dr. Stanley in the Rockefeller Institute laboratories at Princeton, and sharing half the Nobel prize with him, is Dr. Northrop. His most notable work has been in the field of enzymes, the chemical reagents that make digestion, respiration and other vital processes possible. In 1930 he prepared crystalline pepsin for the first time. This fall he announced the discovery of a mother



NOBELISTS—Dr. W. M. Stanley (top), Dr. J. B. Sumner (center), and Dr. J. K. Northrup, winners of the Nobel Prize in chemistry.



NOBEL PHYSICIST—Dr. P. W. Bridgman, winner of the Nobel prize in physics, works at duplicating earth pressures.



substance of all proteins, whether they occur in meat, enzymes, viruses or antibodies. This mother substance he has named proteinogen.

The other half of the prize in chemistry goes to Dr. Sumner, who was the first scientist ever to crystallize an enzyme. He prepared crystalline urease

in 1926. This enzyme is important in the nitrogen cycle in nature. Eleven years later, in 1937, he crystallized the important enzyme, catalase, which protects living cells against the hydrogen peroxide they form in their own respiratory processes.

*Science News Letter, November 23, 1946*

# CHEMISTRY

## Iodine Purifies GI Water

Disinfectant tablet contains iodine, which makes water in GI canteens taste better than that with a chlorine disinfectant.

► WATER FROM GI canteens in the future will be safer and taste better, thanks to a new disinfectant tablet which uses iodine instead of chlorine to purify the water.

Chlorine and chlorine compounds, stand-bys in water disinfection for almost 40 years, as ordinarily used cannot be counted on to protect troops in the field from amebic dysentery or schistosomiasis. The parasites of these diseases when in the cyst stage are too resistant to disinfection by such means. It would take at least six standard Halazone tablets, for example, to disinfect a canteen of warm water in 36 minutes. After this treatment, the soldier probably would not drink the water because of the unpleasant taste. Even with strict supervision, it was sometimes difficult to keep soldiers from drinking water from streams or wells of doubtful purity, rather than use the chlorine-disinfected water.

Search for more satisfactory canteen disinfectants was led during the war by Dr. Gordon M. Fair of Harvard under OSRD contracts. Quarternary ammonium compounds and triiodides were investigated. One of the latter, triglycine hydroperiodide, was finally selected by the Quartermaster Corps as having the highest military characteristics.

Tablets of this dissolve quickly, liberate seven and one-half parts per million of elemental iodine, enough to kill quickly the cysts of amebic dysentery germs and to reduce the number of typhoid, cholera and bacillary dysentery germs from about one hundred million to five or less per 100 cubic centimeters (about three ounces) of water.

Soldiers and Marines who tried the tablets did not object to the taste or odor of the water. Additional tests of the new "tablet, water purification, individual,

iodine," will be carried out during the coming year.

*Science News Letter, November 23, 1946*

# CHEMISTRY

## Soviet Chemists Join World Chemistry Union

► SOVIET CHEMISTS have pledged themselves to participate in a post-war revival of the International Union of Chemistry when representatives of 21 nations gather in London next July.

Despite lack of Soviet participation in such United Nations sponsored organizations as UNESCO, Dr. Alexander Nesmeyanov has been elected vice-president of the international union upon nomination of the Moscow Academy of Sciences. He takes the place of a German dropped because Germany, with Japan, is now barred from the world chemical organization.

Dr. Marston Bogert of Columbia University, as president of the union, has received assurances from other Soviet scientists that they will aid in re-establishing the world organization of chemists.

Difficulty in locating some officials of the union who disappeared in various countries during the war is hampering the plans for reconstituting this world organization which last met in Rome in 1938.

*Science News Letter, November 23, 1946*

Some scientists believe that *bees* work in the dark to keep the honey soft, as it crystallizes in the light.

The *coyote* eats almost four times as many rabbits and other rodents as it does domestic animals.

# ENGINEERING

## Silica Particles Used As Modifiers in Cement

► SILICA PARTICLES almost too small to be seen under a microscope, which are formed as a byproduct in metallurgical operations, can be used as modifying agents in cement, James W. Sharp of Los Altos, Calif., has discovered. He has assigned rights in his patent, No. 2,410,954, to the Permanente Cement Company, one of Henry Kaiser's firms.

*Science News Letter, November 23, 1946*

Alaskan coastal forests contain spruce trees up to five feet in diameter and over 150 feet high.

## SCIENCE NEWS LETTER

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## MEDICINE

## Returned Servicemen Spread Amebic Dysentery

► LOOK for a postwar increase of amebic dysentery, or amebiasis as doctors prefer to call it because dysentery is not always a feature of the disease.

This serious illness, as well as malaria, intestinal worms and giardiasis, are the so-called tropical diseases likely to be spread through the United States by returned servicemen, experience at New York City's tropical disease diagnostic service through the past year shows.

Among 1,151 veterans, amebiasis was discovered in 10% by routine examinations, Drs. Howard B. Shookhoff and Wheelan D. Sutliff reported to the American Public Health Association.

More men with this infection undoubtedly would have been picked up if repeated examinations could have been made. The incidence of the disease among these veterans is much higher than the general level of infection in cities like New York. Spread of the disease will be difficult to detect because reporting of it is very incomplete and there may be a long period between the time of infection and the development of symptoms which lead to its detection.

*Science News Letter, November 23, 1946*

## NUTRITION

## Get Enough Calories To Help Your Steaks

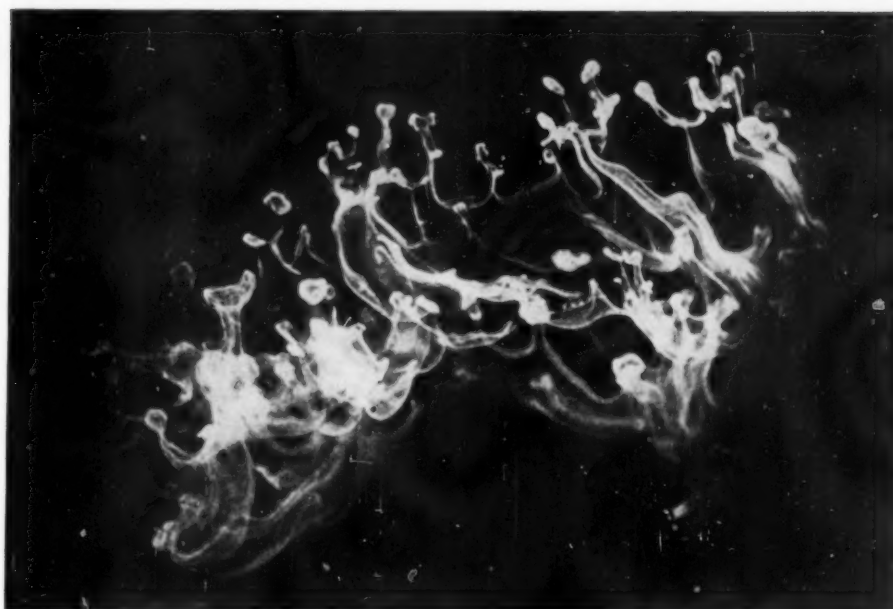
► TAKE A TIP from the Quartermaster Corps, when all the meat you are hungry for comes back on the market, and be sure to eat enough other foods to supply the calories you need.

Proteins, which you get from meat, are not utilized to the best extent unless calories of a minimum level are also eaten, research indicates.

Why some foods, like meat, have appetite appeal and why bread and some other foods can be eaten in large amounts for unlimited periods while large amounts of other foods lose their appetite appeal are questions the Quartermaster Corps is now trying to answer.

Rations which will taste better to future GIs and therefore be eaten and do their job of nourishing the soldier are the object of research in a new program. Civilians may also benefit since some of the studies will be on such fundamental problems as the relation of digestion and psychological factors to food acceptance and therefore to good nutrition.

*Science News Letter, November 23, 1946*



**CURLY CLOUD**—When the cloud is seeded with ice germs, made of dry-ice, the cloud enters its first stage of transformation from water droplets to snow. This photograph was taken at the General Electric laboratory a few seconds following initial seeding.

## PHYSICS

## Man Makes Snow

Artificial snow may be used to clear supercooled clouds over airfields and keep ice off wings of planes. Solid carbon dioxide is used in making snow.

► ARTIFICIAL man-made snow may be made in the future to clear dangerous supercooled clouds over airfields.

Using dry-ice fragments against a cloud of supercooled droplets in a laboratory cold chamber, Vincent J. Schaefer, General Electric scientist, found that the droplets formed ice crystals that fell like snow.

An airplane over Greylock Mountain in western Massachusetts was used to bombard a natural cloud with the solid carbon dioxide and snow fell.

This method may be used to protect planes from the supercooled clouds which are one of the chief causes of icing on aircraft. Maj. Gen. Curtis E. LeMay, chief of research and development for the Army Air Forces, is one of those interested in testing the artificial snow system.

Mr. Schaefer reported his laboratory method for creating the ice crystals in *Science*, (Nov. 8). He first formed super-cooled clouds by introducing moist air into a small commercial freezing unit

with the temperature of the resulting cloud about minus 15 degrees Centigrade.

When he hung a piece of dry-ice in the cooled cloud, the cloud was completely converted into ice crystals in 10 seconds. The crystals increased in size when more moisture was added.

Examining the crystals under a microscope, Mr. Schaefer found they were similar in size to those of "diamond dust," the small natural crystals found on cold mornings.

In addition to using dry-ice as a source of ice nuclei, he used a rod cooling in liquid air. When this passed through the supercooled cloud, it left behind a trail of submicroscopic nuclei that caused the cloud to dry up as the ice crystals grew.

Many clouds in the air are in "super-cooled" condition. They contain water droplets whose temperature is below freezing, but which are not frozen. Science has not yet found the reason for this condition.

*Science News Letter, November 23, 1946*



**NO DRUMSTICK**—This turkey won't feed hungry boys on Thanksgiving Day; it is one of the 30 ocellated turkeys brought to the United States from Guatemala.

#### ORNITHOLOGY

### Family Thanksgiving Fowl To Be White This Year

See Front Cover

► **THIRTY OCELLATED** turkeys, more brilliantly colored and smaller than the familiar Thanksgiving fowl, have arrived from Guatemala—but not to grace Thanksgiving tables. Their great-grandchildren may make good eating, for Dr. J. S. Newell of Connellsville, Pa., who collected them, plans to establish the species in this country.

In the meantime, the U. S. Department of Agriculture is breeding a variety of small white turkey, shown on the cover of this *SCIENCE NEWS LETTER*, especially for family use. The male bird averages 15 pounds dressed, and the hens' average weight dressed is only eight pounds, so the family dinner table won't get competition from hotels and restaurants.

This is the first season of popularity for the snow-white gobbler, officially called the Beltsville Small White. White turkeys have been bred at the Beltsville Experiment Station for ten years, but they were not introduced to the public until 1941. Then, because they cost more to produce and price ceilings were uniform for all turkeys, breeders were not very interested. Only about one four-hundredth of this year's turkeys will be the Beltsville White. It is predicted that the number will increase considerably by next fall. The small white turkey is plump and broadbreasted.

*Science News Letter, November 23, 1946*

#### AERONAUTICS

### Army Liaison Plane Has Folding Wings

► **SPECTACULAR** take-off and landing characteristics feature the new Army liaison airplane for use in observation, communication, and photographic work. It can take off in 230 feet and has landed in 227 feet at 43.5 miles per hour.

The new plane, equipped with folding wings and adjustable landing gear, can be towed over rough ground by military vehicles or can be hauled in a truck. Without having its propellers removed, it can be towed aloft by another plane, glider fashion, and then released on its own power.

The Army designation of the plane is L-13. It will be constructed by the Consolidated Vultee Aircraft Corporation, and is designed to replace the L-5 "Flying Jeep." It is an all-metal plane approximately 32 feet long with a wingspan of 40.5 feet. Its empty weight is less than a ton and its useful load about a half ton.

The plane is powered with a 245 horsepower Franklin engine, has a cruising speed of 92 miles per hour, and a range of 368 miles. Skis can be installed to replace the landing wheels, and floats can be used instead of the landing gear.

*Science News Letter, November 23, 1946*

#### RADAR

### Radar-Equipment Takes Pictures of Hurricane

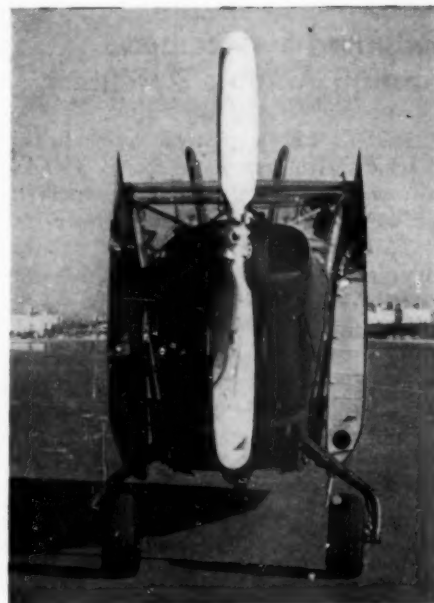
► **A RADAR-EQUIPPED** plane flew through a hurricane east and northeast of Miami, Fla., Sept. 12 and 13, to make the first radar pictures of a hurricane ever made from aircraft, the Navy revealed.

The pictures, made aboard a Navy Privateer, show how the storm appeared on the radar scope, as compared with the visual description brought back by the crew who flew the storm.

The eye-witness "log" of Ens. Wilfred J. Remillard, USNR, Fairhaven, Mass., aerologist on the flight, tells how the plane fought its way through the hurricane's turbulent winds of as high as 85 knots.

In the "eye" of the big storm, he reported little rain and moderate turbulence as the hurricane raged around its center.

Radar scopes showing hurricanes had previously been photographed aboard ships and at shore stations, but the Navy reports that the September flight is the

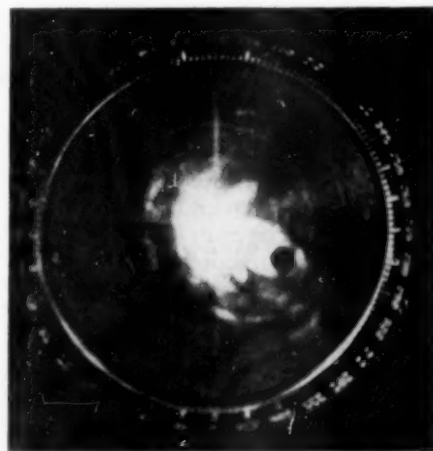


**L-13**—Folding wings permit the plane, made by the Consolidated Vultee Aircraft Corp., to be towed or hauled over rough terrain. The landing gear is adjustable.

first time radar pictures have been made of a hurricane from aircraft.

The microwave pulses of radar of an appropriate frequency are echoed by water droplets in the air, forming patterns which trained observers can recognize. On the ground, however, radar is limited by the optical horizon, while it has an almost limitless horizon high in an airplane.

*Science News Letter, November 23, 1946*



**RADAR PICTURES**—This picture, taken as the plane was leaving the storm area, shows the eye, or center, of the storm as the black dot. Official U. S. Navy Photograph.



## MEDICINE

## "Blue Babies" Saved

Stitching the lung artery to the aorta is a new system that saves babies that suffer from lack of oxygen in blood stream because the artery is so narrow.

➤ MORE "BLUE BABIES" may be saved by surgery through a new technic developed by Drs. Willis J. Potts, Sidney Smith and Stanley Gibson, of Children's Memorial Hospital and Northwestern University Medical School.

Two children have already been "tremendously" helped but a third died, they report to the American Medical Association (Nov. 16).

The new method consists in stitching the lung artery to the aorta, big artery leading directly from the heart and from which the body's whole artery system proceeds. In the original operation devised by Dr. Alfred Blalock and Dr. Helen B. Taussig of Johns Hopkins, the lung artery is stitched either to an artery supplying blood to the shoulder and arm or to one supplying blood to the neck and head. In the latter case, there is danger of not enough blood reaching the brain. This led the Chicago surgeons to work out the new method.

Dr. Blalock and associates and another surgical team had considered use of the aorta for the operation but concluded

from preliminary studies that paralysis of the legs might result. It would follow temporary anemia of the spinal cord resulting from clamping off the aorta and stopping blood flow through it during the operation.

This difficulty was overcome by a special aorta clamp devised by Drs. Potts and Smith. The flanges of this clamp enclose the aorta but pinch off only a small part of it. Blood continues to flow through the unpinched portion of the aorta, while the surgeon makes a three-eighths inch cut in the small pinched portion and stitches to this a similar sized cut in the lung artery.

A defect in the lung artery, present when the baby is born, is the cause of the condition remedied by the operations. The artery is so narrowed that only a little blood can be pumped through it. That little cannot pick up enough oxygen to supply the body. That is why the children are weak, pant on slightest exertion and after eating, and have deep blue colored skins.

*Science News Letter, November 23, 1946*

## PHYSICS

## Powerful Betatron X-Rays

➤ POWERFUL radiations from betatrons can be used for quick spotting of flaws in heavy steel, giving increased detail and greater speed than ordinary X-ray equipment. This promise of an important new tool for industry was emphasized as the new 20,000,000 electron volt betatron at the U. S. Army Arsenal, Picatinny, N. J., was demonstrated.

For industrial X-ray work the betatron's radiations can penetrate 20 inches of steel in 20 minutes and detect flaws .002 inches wide and one thirty-second of an inch deep. By making enlargements on radiograph film directly, the machine speeds the time required for X-ray inspection.

One competent laboratory technician can operate the betatron, making it practical to X-ray with the betatron every piece of heavy equipment produced instead of the one out of 50 or 100 units

as is now done, it was predicted.

Housed in a special X-ray laboratory, the new betatron is reported to be ready for use by medical and research groups seeking to perfect methods of applying betatron roentgen and electron radiations to clinical therapy.

The betatron combines a transformer winding and an X-ray tube in a porcelain "donut." The machine was built by Allis-Chalmers.

*Science News Letter, November 23, 1946*

## NUCLEAR PHYSICS

### General Electric Ends Monopoly on Betatron

➤ VOLUNTARY termination of its patent-protected monopoly of the betatron, heavy-artillery piece among atom-smashers, was announced by the General Electric Company. Its seven basic patents on this machine are now listed in



**BETATRON**—Exposure control ionization chamber is connected in the installation of the 20,000,000 volt betatron at the U. S. Army Arsenal at Picatinny.

the register of patents available for licensing by the U. S. Patent Office.

Rights to build and use betatrons will be granted without fee to educational and other non-profit institutions. Firms operating for a profit will be charged a moderate royalty. One such license has already been issued to the Allis-Chalmers Manufacturing Company.

A betatron has been ordered by the Manhattan District Project, and another by the University of Chicago. Both will be used in nuclear research.

A betatron consists of a massive electromagnet surrounding a doughnut-shaped glass vacuum tube in which electrons are speeded up until X-rays of 100,000,000 electron volts are produced.

*Science News Letter, November 23, 1946*

## ZOOLOGY

### Rabbits Like to Eat Dried Stinging Nettles

➤ THISTLES, traditionally favored tidbit of donkeys, have prickly rivals in stinging nettles, which have been found to be good rabbit fodder. They have to be dried, however, before rabbits care to eat them, English rabbit-breeders have found. In recent experiments conducted by W. King Wilson of Harper Adams Agricultural College at Newport, Shropshire, rabbits fed on freshly cut nettles failed to thrive.

*Science News Letter, November 23, 1946*

## CHEMISTRY

**Ethyl Silicate Paint Is Heat, Fire Resistant**

► A COLORLESS liquid mixed with pigments promises new paints which resist heat, retard fire and do not darken with age. The liquid is ethyl silicate, use of which was reported to the American Chemical Society by H. D. Cogan and C. A. Setterstrom of the Mellon Institute of Industrial Research.

The new paints are expected to be particularly useful in decorating and protecting theatrical scenery, industrial fabrics, furnace castings and the walls and chimneys of chemical plants.

Pigments to be used with ethyl silicate include ochre, sienna, chromium oxide, iron oxide, titanium oxide for white and carbon black for black.

Ethyl silicate has previously been used in protecting stone statues and private dwellings from weathering and for increasing the hardness of stone, brick and concrete in building construction.

*Science News Letter, November 23, 1946*

## PUBLIC HEALTH

**Cafeterias Have Dirtier Dishes than Restaurants**

► DISHES ARE NOT washed as clean in cafeterias as in luncheonettes and restaurants with waiter service, Hyman Kleinfeld and Leon Buchbinder of the New York City health department found in a survey of 1,005 New York restaurants.

The quality of washing as measured by the swab rinse test was in general "very poor." The situation is probably as bad in other places as in New York.

More than three times as many cups and glasses washed by machine passed the test for cleanliness as those washed by hand. But only about two-fifths even of the machine-washed passed the test, and almost nine-tenths of the eating places used hand washing methods entirely or in part.

Hand-washed spoons and forks "passed" in as high a percentage as the machine-washed spoons and forks.

Only about 5% of the hand-washed silverware came from establishments that really made a serious attempt to get these utensils properly cleansed. The findings with this small group were about 50% better than those from the remaining 95% of the samples which came from establishments

in which less care is taken.

Another small sample washed by a special silverware machine yielded a passing percentage about twice as good as the general average for machine washing.

*Science News Letter, November 23, 1946*

## PSYCHOLOGY

**New Evidence Scores Men Better Drivers than Women**

► HERE'S NEW evidence in the argument as to whether men are better drivers than women:

Tests conducted by highway safety engineers at the recent Ohio State Fair showed that the men have a quicker reaction time. That is the time it takes after seeing a hazard to apply the brakes.

In tests on more than 1,000 drivers, the engineers found that men had an average reaction time of fifty-seven hundredths of a second, compared with sixty-two hundredths of a second for the women.

Your reaction time increases with age, the tests revealed, but persons under the age of 20 are slower in applying the brakes than those in the 20-29 group. Above the age of 29, the time increased.

The machine used to test the reaction time of drivers was the perception-reaction device designed and built by the division of traffic and safety of the Ohio Department of Highways. A chronoscope measures the time a driver takes to lift his foot off the accelerator and press down the brake pedal of the controls of a standard automobile after a red light is flashed.

*Science News Letter, November 23, 1946*

## INVENTION

**Lucite Guides Light In Code Translation**

► DOT-AND-DASH telegraphic code printed on paper tape can be translated into electrical sending over the wire by a device on which Paul M. Rainey of Martinsville, N. J., has received patent 2,410,104. Instead of shooting light through the tape to a photocell on the other side, with consequent gambling from accidental spots and imperfections on the tape, Mr. Rainey's invention uses reflected light, guiding the reflection from the lamp to the tape, thence to the photocell by means of a V-shaped piece of Lucite. Patent rights are assigned to the Federal Telephone and Radio Corporation.

*Science News Letter, November 23, 1946*

**IN SCIENCE**

## PUBLIC HEALTH

**Western, Middle States Rank Highest in Health**

► THE FAR WEST and the middle states were given top ranking in health over all regions of the United States by Dr. Carl W. Strow, of the Research Council for Economic Security, Chicago, in a report to the American Public Health Association.

The southeast and southwest regions went into the low ranks designated as underprivileged health regions.

Health rankings were made on the basis of infant deaths, tuberculosis death rate, deaths from six infectious and contagious diseases and the death rate in the age group one to 60 years.

Climate, population make-up, public health and medical care facilities, economic resources and culture account for the differences in health ranking.

Equal health opportunities throughout the nation can be provided in two ways: (1) by shifting financial resources within the country; (2) by economic and cultural reconstruction of the underprivileged areas.

"Both should be used," Dr. Strow declared.

*Science News Letter, November 23, 1946*

## ELECTRONICS

**Electronic Organ Has Tones of 1,333 Pipes**

► WARTIME electronics work has produced a new musical instrument which boasts the numerical combinations of a pipe organ with 1,333 pipes. The electronic organ was demonstrated to the Acoustical Society of America.

Named the Connsonata, the new organ produces tones and controls pitch electronically. There are no moving mechanical parts as the instrument produces tones with vacuum tube oscillators.

Developed by C. G. Conn Ltd., Elkhart, Ind., the electronic organ is claimed to be more capable than the conventional pipe organ in interpreting orchestral compositions transcribed for the pipe organ. It has keyboard and pedals similar to the pipe organ.

*Science News Letter, November 23, 1946*



# SCIENCE FIELDS

## BOTANY

### Some Folks Cultivate Hay Fever's Cause, Ragweed

► RAGWEED, the bane of hayfever victims' existence, is actually cultivated in the Dominican Republic and used by the country people there in poultices for sundry aches and pains.

This curious bit of folk medicine is reported in *Science* (Nov. 8) by a father-and-son botanical team, H. A. Allard of Washington, and Howard F. Allard, now doing research on rubber problems, with headquarters at Ciudad Trujillo.

The ragweed cultivated in the Dominican Republic is not the same species as either of the two most common troublemakers found in this country, though it is closely related. Oddly enough, despite the cultivation of the weed, persons sensitive to ragweed pollen seldom have to sneeze in the island republic. There just isn't enough wild ragweed to count.

*Science News Letter, November 23, 1946*

## ICHTHYOLOGY

### Salmon Add New Mystery To Their Migration Habits

► DO SALMON eggs "remember"?

A new angle has been added to the already tangled riddle of salmon migration by the failure of Canadian fisheries men to restock a depleted river, once rich in fish, by planting its headwaters with eggs taken from other waters in the same system. The story is told by Dr. R. E. Foerster, director of the Biological Board of Canada.

Eagle river in British Columbia, once a fishing ground for the high-grade, red-fleshed sockeye salmon, long ago lost its profitable silver horde. In an effort to build it up again, millions of eggs were transplanted from two other sources over more than ten years. The eggs hatched all right, and before the young fish left on their migration to the sea many of them were marked by clipping certain fins.

When the time came for the matured fish to come in from the sea and migrate upstream, the marked individuals were very carefully watched for. But of thousands of marked fish only a few scattering individuals were ever caught and

identified.

They did not turn up in other rivers, either. Dr. Foerster suggests that the fingerlings may have failed to reach the sea, either through capture by other fish or by remaining permanently in a lake that is part of the Eagle river system. There is, however, no proof for this theory. But if the explanation does not hold, no other satisfactory one seems to be at hand.

*Science News Letter, November 23, 1946*

## PSYCHOLOGY

### Teachers Can Prevent Mental Breakdowns

► TEACHERS can help to prevent mental breakdowns, Dr. Morton A. Seidenfeld, psychological services director for the National Foundation for Infantile Paralysis, declared.

Most competent teachers can learn to recognize early signs and symptoms of behavior which show the child's mental health needs attention.

Orderliness, politeness, taking part in prescribed activities and freedom from misbehavior, many teachers will be surprised to learn, may be a veneer concealing deep-seated mental disturbances in the child.

To give real mental health help to the children, the teacher must eliminate in herself those attitudes which pay premiums on the child's capacity to conform superficially in the class room.

*Science News Letter, November 23, 1946*

## NUTRITION

### Food, Time Needed To Restore Starving

► ALL THE starvation during the war was not in European famine areas and concentration camps. There was a starvation area in Minnesota where 34 men were found suffering from hunger, weakness, anemia, edema, loss of endurance, polyuria, bradycardia and depression.

This was a man-made starvation undertaken in the interests of medical science.

Conclusion of the study reported by Dr. Ancel Keys of the University of Minnesota who directed it: Food and time, not vitamin pills or protein supplements, are what is needed to restore the starving to health. Between 3,000 and 4,000 calories per day and from six months to one year are the amounts of food and time needed.

*Science News Letter, November 23, 1946*

## MEDICINE

### Diphtheria Epidemic Need Not Be Feared

► FEAR THAT we are in for a serious diphtheria situation in the United States is dispelled by study of diphtheria epidemic trends, Dr. Gaylord W. Anderson, Mayo professor and director of the University of Minnesota School of Public Health, reported to the American Public Health Association.

The only significant episode in the past five years was the "amazingly high" diphtheria rate reached in certain occupied areas in northwestern Europe. Appearance of new, virulent strains of diphtheria probably had less to do with this than secondary epidemiological factors such as poor sanitation, housing and health facilities.

The rise in diphtheria in the United States during the past two years was probably due to normal periodic fluctuations of the disease. It is now declining rapidly in those parts of the country chiefly responsible for the rise.

*Science News Letter, November 23, 1946*

## CHEMISTRY

### U. S. May Apply Mica Substitute as Insulation

► MICA SUBSTITUTE, a German wartime development for use in electrical instruments, may find American applications in the manufacture of high frequency insulation materials for radar and other equipment. It is a synthetic resin.

Manufacture of this material involves making a vinyl resin known as a vinyl carbazole and changing it into a polyvinyl carbazole. A solution of this in tetrahydrofuran can be cast in thin foils. These were used as mica substitutes in condenser dielectrics in Germany.

A report, prepared by Dr. G. M. Kline of the National Bureau of Standards, who studied the method in postwar Germany, has just been issued by the Office of Technical Services, U. S. Department of Commerce.

Orders for the report (*Polyvinyl Carbazole in Germany*: PB-33272; photostat, \$1; microfilm, \$1; 11 pages) should be addressed to the Office of Technical Services, Department of Commerce, Washington 25, D. C., and accompanied by check or money order, payable to the Treasurer of the United States.

*Science News Letter, November 23, 1946*

ENGINEERING

# Ships Made From Models

Miniature model ships are made from blueprints and tested in water at the Navy's Taylor Model Basin in Washington before any ship is constructed.

By MARTHA G. MORROW

► WARSHIPS of an atomic-age Navy are afloat near Washington today. Slim, sleek, cutting the waters of an inland "sea," they are models of ships to be.

Boys who like to build models envy the serious scientists whose life work it is to test submarines and seaplanes, motor boats and aircraft carriers, landing barges and luxury liners. These are all tried out in miniature even before detailed plans are put upon the drawing board.

Looking like an elongated super-Quonset hut nestled in a suburban valley west of Washington, the Taylor Model Basin is the longest and best-equipped experimental basin in the world. Here millions of dollars are saved by building and rebuilding small wooden versions of ships of the future.

No ship's keel is laid for the Navy until a working model is pulled through the waters of the model basin and passes stringent tests. Because the performance of a finished ship can accurately be forecast from tests tried on wooden models, more efficient ships ply the seas to give the United States a fleet second to none.

## Model Is Hollow

The ship model employed in these tests is usually about 20 feet long. Without superstructure, it is hollow and fashioned from layers of Western pine glued together. A rough profile of the ship is first cut in the wood. With planes, sandpaper and infinite patience, this is shaped to represent the outer surface of the ship's hull. From keel to deck, the ship is made to scale, conforming to the blueprint specifications to within a hundredth of an inch.

The ship is painted to preserve it and help the model slide through the waves, then weights are added to give the proper water line and center of gravity. The model is then ready to be towed over one of the main basins to test the shape of the hull and determine the power needed to drive the full-size ship.

The model is pulled at various speeds underneath a carriage that looks like a bridge on wheels. Starting from rest, the carriage slowly acquires the required speed and keeps it uniformly throughout the test. The model, sliding through the water, produces waves such as would be formed by a full-size craft. The actual resistance of the miniature ship in pounds and hundredths of a pound is measured as it cuts through the water.

The proper locations of bilge anti-rolling keels and other appendages are determined by the way in which the water flows around the model. These appendages cannot cut across these lines of flow without tending to slow down the ship.

The model is painted white, then small holes are bored at strategic places. Hydrogen sulfide in solution is fed through these holes. When the model speeds across the water, this acid leaves dark lines on the exterior of the hull, indicating the lines of flow of water.

During the self-propelled test, the model is driven under its own power

along the basin with small model propellers. An operator in the carriage moving overhead regulates the speed of the ship. From this test even more accurate measurements are secured of the power needed for specific speeds to be obtained by the full-size vessel.

Experiments conducted at the basin showed that certain ships would drive easier by extending the bow in a blunt or rounded form below the water. By incorporating the bulb bow, the enormous bow wave usual in such ships was greatly reduced, with a corresponding reduction possible in engine power.

## Three Towing Tanks

Under the arched roof of the Taylor Model Basin are three enormous towing tanks, each designed for a particular kind of work. Models of large ships are towed or self-propelled in the large deep-water basin. This is 963 feet long, 51 feet wide, and 22 feet deep; an extension now nearly completed will make it 2,775 feet long.

River and harbor craft are tested in a shorter shallow-water basin that joins the large tank. This basin is 303 feet long, 51 feet wide and 10 feet deep. Its depth, however, can be varied to represent rivers, canals and channels likely



**CRYSTAL-CLEAR**—The water in the shallow-water basin and deep-water basin where ship models are tested at the Navy's Taylor Model Basin reflects the arched ceiling.



to be encountered by barges and tugboats under test.

The far end of the shallow-water basin swings around in a J shape. This is especially useful in testing a ship's ability to twist and turn when evading a torpedo.

PT boats, seaplanes and pontoons are tested in the high-speed basin that runs parallel to the large basin. This is 1,168 feet long, 21 feet wide and 10 feet deep. So that torpedoes and other high-speed craft can be run at full speed, the length of this basin is being greatly increased. When completed this winter, with the extension it will be three-fifths of a mile long. The carriage will be capable of running 70 miles an hour—a real thrill for those who climb aboard.

So that all measurements will be absolutely accurate, the carriage rails running along both sides of each tank follow the curvature of the earth. This means that the midpoint of the high-speed basin is about five-eighths of an inch higher than the ends. The rails had to be set with this fantastic accuracy because the actual forces involved in towing the models are so small that if gravity had a chance to work on the carriage, it would invalidate the results of the test.

#### Still Water in Basins

In each of these three basins, the model is towed through water of mirror-like stillness. In the circulating water channel, on the other hand, the water flows with river-swiftness and the model is held stationary while measurements are taken. Here tests may be conducted for an indefinite period. Floats, mines and torpedoes in particular are tested in the circulating water.

The water channel consists of an open-top test section 22 feet wide and 60 feet long in which flows a stream of water nine feet deep. The model can be viewed and photographed through windows in the walls and bottom of the channel.

An exact copy of the propeller of a full-size boat is tested in special water tunnels. In these water circulates at a known speed through a closed circuit. The propeller is mounted on a motor-driven shaft projecting into the test chamber.

Photographs are taken through glass port-holes in the sides. The air pressure above the water in the test chamber is lowered by vacuum pumps so that the combined effect of atmospheric and water pressure on the model will be in proportion to that of the full-size propeller.

The effectiveness of the propeller is



**NO INSIDES**—Without superstructure, a model ship is hollow and fashioned from layers of Western pine glued together.

determined by watching the formation of water-vapor cavities or "bubbles" on the propeller blade surface. These are made visible by means of stroboscopic illumination—flashes of light timed so as to make the moving blade seem to stand still. Too many bubbles signal the need for a change in size or shape of the blades.

The headquarters for nautical experimentation is named in honor of Rear Admiral David Watson Taylor, responsible for model testing of ships in this country. It was he who planned the original experimental basin at the Washington Navy Yard and for years guided its research.

#### Super Model Basin

But with the advent of a two-ocean Navy, the Washington Tank proved inadequate for its many tasks and also its equipment was fast becoming obsolete. Thus plans were drawn up for a super model basin, the best in the world.

Construction of the Taylor Model Basin was authorized by Congress in 1936. The basin was completed and put into full commission just prior to Pearl Harbor. Capt. H. S. Saunders is its new director.

Carderock, Md., some 12 miles from Washington, in the valley of the Potomac, was made the site of the new establishment for several reasons. Here solid rock, needed for accurate align-

ment of the rails of the towing carriages, was near the surface. An ample supply of clean, fresh water was available. There was little traffic to disturb the alignment of the towing carriage rails or their foundation.

Fresh water is used instead of salt water because of its unvarying weight and performance. The values secured are reinterpreted to apply to salt water.

Plant life must be kept to a minimum in the basin water, so no sunlight enters the windowless building. The water surface is skimmed each morning so that no film will interfere with the performance of the models.

Each class of ship built or even considered during the war was tested in the model basin. LSTs, LCIs, new destroyers and carriers were all tried out here. Models of older (See page 332)

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## Do You Know?

World *butter* production has declined with the expansion and consumption of other, more profitable, dairy products.

Most *headaches* are due to migraine or to muscular tension associated with anxiety and emotional tension.

A *housefly*, beginning its reproductive activities in early spring, might have over 5,000,000,000 descendants by fall if all lived and reproduced.

*Carbon*, from wood soot and other sources, has a beneficial effect in most soils; it causes bacteria to work faster and accumulate humus and fix more nitrogen from the air.

*Parchment diplomas* awarded by many colleges are a sheepskin product coming to the United States largely from England; one British parchment factory is said to have been in operation for a thousand years.

*Shrimp* develop from tiny size to five-inch crustaceans in coastal waters in a few summer months, and, when grown, go out from the shore to spawn; then they go farther to sea to shoals where they remain, never spawning again.

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## (From page 331)

battleships and cruisers to which blisters had to be added to improve under water protection underwent experiments here first.

With the return of peace, test runs are now being made of luxury liners and pleasure craft. The laboratory is authorized not only to conduct research for the Navy and other branches of the government, but for private shipbuilders and designers who pay the cost of the work.

The structural performance of metals is also studied at this marine laboratory. Both full-size and model-scale beams, columns, riveted and welded joints are tested on an alternating stress machine.

### Strain Tested

The amount of stress and strain a wide variety of structural specimens will withstand before breaking is estimated on another apparatus. A new testing frame has been devised so that forces can be applied from all three sides in testing the structural strength of metals.

The nature of an explosion and its effect upon the structure of a ship is studied in a pentagonal pond built nearby. Sections of steel plate with bulkhead doors are lowered into the pond and pictures are taken from a bathysphere to show what actually happens when the TNT goes off.

The path of a model bomb or torpedo after it strikes the water is watched through the transparent walls of an enormous tank. Glass windows three-quarters of an inch thick and four times as strong as ordinary plate glass of the same thickness form one side and one end of the tank. Continuously filtered, crystal-clear water is used to insure clear photographs, complete to the minutest detail.

### Air Flow Checked

Extensive tests check the flow of air over the decks of carriers, or around the bridges and upper structures of ships. In these tests a model of a carrier deck, cut off at the water line, is set up in a wind tunnel, also used in testing planes. Threads pasted to the model show the path taken by the wind and the eddies created.

Lilliputian launchings were made of big ships built on rivers with only a short run to the other side. Proper models of ships were mounted on miniature launching ways to show precautions needed to keep ships built at such Navy Yards as those at Norfolk and Philadelphia from running aground. Scale mod-

els of snubbing chains or anchors were used to stop the ship's run. From these models, the necessary precautions were devised and full-scale ships performed almost exactly as predicted from the models.

### Small-Scale Replica

A small-scale replica was built to test the effectiveness of the anti-submarine net outside San Francisco harbor. The model, carried up and down by the carriage over the big model basin, showed that to be effective the whole scheme of mooring had to be changed.

Two separate shops, one woodworking and the other metal-working, form an integral part of the basin. Models of ships, aircraft and other forms to be tested are fashioned by experts skilled in building in wood something that will eventually be constructed in steel. All special equipment, instruments and other gear as well as models in metal are made in the other shop.

Problems ranging from how best to load a ship to how to identify our fleet, from the effectiveness of enemy designs to the best kind of seasick pills, are all handled at the basin. For questions concerning anything that is propelled, towed or projected on or through the water, or driven through the air, they either have the answer or can get the answer for you.

Science News Letter, November 23, 1946

Only about 1% of the *carbon* atoms found in nature occurs as carbon 13; 99% of the carbon atoms weigh 12 mass units.



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Treated Wood and  
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Lithium  
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## MEDICINE

## Tooth, Tonsil Snatching Do Not Cure Arthritis

► TONSIL snatching, as it has often been called, has gone out of fashion, but too many persons are still having teeth pulled with the idea of curing their arthritis, it appears from a report by Dr. Richard H. Freyberg, of Cornell University Medical College, in the *Journal of the American Dental Association*.

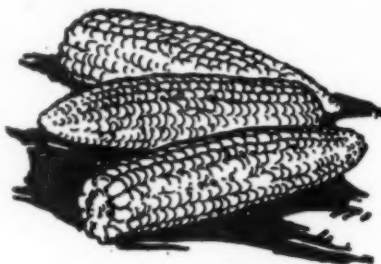
The removal of teeth, or tonsils or other organs, has been done on the theory that the arthritis was caused by infection and that the infection had its focus in a tooth, tonsils, gallbladder or other organ. But there is no proof, Dr. Freyberg states, that rheumatoid arthritis is caused by an infection. Infection in a tooth or elsewhere might act as a trigger setting off the arthritis. Once established, however, the arthritis goes on independently of the infectious trigger, if there is one. So it is doubtful whether removing the focus of infection would cure long-standing arthritis.

A focus of infection should be removed or cleaned up, whether or not a person has arthritis. If he has arthritis, getting rid of the infection should improve his health and perhaps make him better able to fight the arthritis. But he should not expect the arthritis to be cured, and arthritis alone is not enough reason for sacrificing a good tooth or teeth. Dentists recognized this before physicians did.

You may have heard of someone with arthritis who got well after having some or all of his teeth pulled. Doctors have heard and seen such reports, too. Analysis of the reports, Dr. Freyberg says, shows that most of the patients did not have arthritis but had some other disease which would have improved regardless of the treatment.

Besides rheumatoid arthritis, there is another common form known as osteoarthritis or hypertrophic arthritis. This occurs in middle or old age, usually in persons who are otherwise healthy though they may be overweight. A few joints are irregularly swollen and give trouble. One knee may get stiff after sitting for a while and give trouble going up and down stairs. Infection has nothing whatsoever to do with this type of arthritis, so having teeth removed cannot possibly help it, though the teeth may need to be removed because of the condition they are in.

*Science News Letter, November 23, 1946*



### Fundamental Food

► AT THANKSGIVING time we are apt to glorify the turkey and regard as secondary the many other native American contributions to the feast: potatoes both white and sweet, pumpkin and squash, cranberries and blueberries, pecans and peanuts, chocolate and tobacco.

Corn may not appear on the table at all or, if it does, only in the form of cornbread or cornsticks. Yet corn has been the foundation of it all.

The turkey was probably fattened on corn. Certainly his ancestors were, for corn was the only grain possessed by the Indians who first domesticated the turkey and who passed him on to their Spanish conquerors. And for those Indians, whose ruined cities are still among the great wonders of the world, corn was life itself. They ate turkey occasionally; corn they ate every day, as their descendants still do all over Middle and South America.

It is axiomatic among students of human culture that all great civilizations have risen on foundations of grain. Rice-eaters built the vast temples of Angkor Wat and Pnom Penh; men who reared the Pyramids and the Parthenon ate wheaten bread, supplemented with barley and rye; corn was the food of the Mayas, the Aztecs and the subjects of the Incas. And when Europeans settled in this hemisphere, bringing with them their own work and food animals, they learned to eat corn and to feed it to their stock. It has become so characteristically American that we tend to forget that it was American before we ourselves were.

There is good evidence that corn supported the lost Indian cultures within the present United States boundaries. Less spectacular than those of Mexico

and Peru, and less highly organized, the civilization of the ancient moundbuilding peoples was nevertheless relatively well advanced. To erect such imposing monuments of piled earth, with elaborate burial crypts under many of them, required the continuous and coordinated labor of many hundreds of persons. Population densities of even that level cannot be maintained on a hunting-and-fishing basis alone. So it is no surprise to find traces of corn cultivation in the moundbuilder cultures, even as the later Indians in our country were found to be cultivators of corn as well as hunters of turkey and deer.

*Science News Letter, November 23, 1946*

## MEDICINE

## Colds Kill More Babies Than Suffocation Does

► UNSUSPECTED colds or other nose and throat infections are probably the cause of many of the 1,600 infant deaths a year which are now attributed to accidental suffocation by blankets, pillows or other mechanical means, Drs. Jacob Werne and Irene Garrow, of New York City's chief medical examiner's office, charge.

Investigating 200 cases of infants allegedly suffocated in crib or carriage, they found by microscopic study that two-thirds of the babies had acute inflammation in the nose and throat in association with other significant damage to organs. Such signs are conspicuously absent in healthy infants dying of proved violence.

More infant lives may be saved, the doctors declare, by teaching parents to recognize the early signs of colds, influenza and the like in babies and to keep the babies away from persons who have colds or similar infections.

*Science News Letter, November 23, 1946*

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# Books of the Week

**ACRYLICS:** And Other Dental Resins—Stanley D. Tylman and Floyd A. Peyton—*Lippincott*, 480 p., illus., diags., and tables, \$10. A book that appraises the use of acrylics in their newly established position in dental practice. It covers all the accepted uses of the synthetic resins in dentistry, and compares the use of the resins and baked porcelain, older denture-base materials and other restorative materials.

**ACTIVITIES OF THE INTERDEPARTMENTAL COMMITTEE ON SCIENTIFIC AND CULTURAL COOPERATION**—U. S. Gov't. Printing Office, 45 p., illus., tables, paper, 15 cents. Dept. of State Publ. 2622, Inter-American Series 31.

**THE ANGRY PLANET**—John K. Cross—*Coward-McCann*, 239 p., illus., \$2. A fictional account of the first flight by rocket ship to Mars and of the incredible events which took place in several adventure-packed days.

**AUDUBON BIRD GUIDE:** Eastern Land Birds—Richard H. Pough—*Doubleday*, 312 p., illus., \$3. Everyone who enjoys observing birds can identify quickly and with accuracy various species. This book describes the significant points of identification, voice, range, nesting and food habits, methods by which birds may be attracted, and many other items.

**COMMUNICATION THROUGH THE AGES:** From Sign Language to Television—Alfred Still—*Murray Hill Books*, 201 p., diags., \$2.75. Not a cut-and-dried historical account of the scientific background of communication, but a review of progress and of changing philosophies, particularly as related to scientific expansion.

**DEATH VALLEY AND ITS COUNTRY**—George P. Putnam—*Duell, Sloan and Pearce*, 231 p., \$2.75. Tales of the pioneers, of the prospectors and Indians and rangers, are set alongside detailed descriptions of the Valley's weather, its flowers, its wild life, its sights and sounds, and its geological past.

**DIESEL OPERATION AND MAINTENANCE**—Orville L. Adams, Sr.—*Prentice-Hall*, 366 p., illus., diags., graphs and tables, \$5.

Clear and concise presentation of basic principles and procedures, including the methods and techniques of maintenance and repair.

**DIRECTORY OF MICROFILM SERVICES**—Compiled by Jurgen G. Raymond—*Special Libraries Association*, 52 p., paper, \$1.50. What libraries can supply copies of periodical articles in microfilm and photoprint, and at what price.

**HEALTH INSTRUCTION YEARBOOK 1946**—Compiled by Oliver E. Byrd—*Stanford Univ. Press*, 399 p., tables, \$3. A source book, covering a wide range including nutrition, fatigue and rest, mental health and disease, heredity and eugenics, and many other health subjects.

**HUMAN RELATIONS IN RESEARCH INSTITUTION MANAGEMENT**—William A. Hammer—*Mellon Institute*, 10 p., paper, free. A fruitful discussion of how to get the best out of people in the task of research, reprinted from *Advanced Management*.

**INDUSTRIAL RESEARCH LABORATORIES OF UNITED STATES**—Compiled by Callie Hall—*Nat. Research Council*, 415 p., \$5. Bulletin of the Nat. Research Council, No. 113, July 1946. The best current list.

**MATHEMATICS OF FINANCE**—John Northcott—*Rinehart*, 252 p., tables, \$3. A text and simple development for students of banking and finance.

**PRINCIPLES OF TOOL ENGINEERING**—Raymond Bloom—*McGraw-Hill*, 234 p., illus., diags. and tables, \$2.40. A simple, understandable beginning text covering systems of production, interchangeability and dimensioning as they pertain to tool design; the tool engineer's training, duties, and place in manufacturing; and the basic machine tools.

**PROCEEDINGS OF THE PACIFIC SCIENCE CONFERENCE ON THE NATIONAL RESEARCH COUNCIL**—*Nat'l Research Council*, 79 p., paper, 50 cents. Bulletin No. 114, Sept. 1946.

**REPORT OF THE UNITED STATES EDUCATION MISSION TO JAPAN**—U. S. Gov't Printing Office, 62 p., paper, 20 cents. Dept. of State Publ. 2579, Far Eastern Series 11.

**UNDER THE RED SEA SUN**—Commander Edward Ellsberg—*Dodd, Mead & Co.*, 500 p., \$3.50. How the author, with a handful of trained men, reclaimed the Red Sea naval base at Massawa—"the hottest spot on earth."

**A WORKBOOK FOR STUDENTS OF BIOLOGY**—Gruenberg, Snyder, and Miller, *Ginn and Co.*, 266 p., illus., diags., tables, paper, \$1.32. This workbook is intended to guide the student in planning experiments, in making records, in organizing observations of facts, in using tables and other devices that help in making comparisons, and arriving at more reasonable conclusions.

*Science News Letter, November 23, 1946*

Because nearly the same sensations are registered by an extremely hot object as by a very cold one, a blindfolded person is unable to tell whether his hand is being burned or frozen.

## MEDICINE

### Living Muscle Grafted On Dead Heart Muscle

► PATIENTS with some kinds of heart disease may in future have fresh, living muscle grafted onto their hearts to replace dead bits of muscle in their own hearts.

This possibility appears from studies reported by Drs. Mandel Weinstein and Benjamin G. Shafiroff of New York University College of Medicine.

Muscle strips from the abdomen and legs were successfully grafted on the heart muscles of dogs, they report in the journal, *Science* (Nov. 1).

Within two or three days after the operation, the dogs were up and about their kennels, except in some cases which became infected. They were exercised daily with no signs of heart trouble.

The idea of replacing dead parts of heart muscle with grafts of fresh muscle has been suggested before but the New York investigators are apparently the first to develop a practical method.

*Science News Letter, November 23, 1946*

## CHEMISTRY

### Sinews from Cattle To Sole Post-War Shoes

► SINEW FROM within the steer's body as well as leather from the outside can now be used for shoe soles. By a process developed originally at the University of Kentucky, the tendon of Achilles, which is the big sinew on the back of the hind leg, can be chemically digested and pressed into sheets of tough, flexible, sole-leather-like material. Full technical details are given in a new publication of the Office of Technical Services, U. S. Department of Commerce.

*Science News Letter, November 23, 1946*

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## •New Machines And Gadgets•

⚙️ **SEEDING** tool, for planting tree seeds, enables one man to cover three to five acres a day. It resembles a walking stick, with a pointed end to penetrate the soil. A trip lever near a top handle, when pressed, sends into the earth a seed or two from the hollow space within the cane.

*Science News Letter, November 23, 1946*

**PORTABLE** rectifier, a complete direct-current power supply source with a capacity of 150 watts, is particularly suitable for laboratory and industrial uses because of its size and weight of only 45 pounds. Using a selenium rectifier element, its output is adjustable from zero to six volts with a continuous capacity of 25 amperes.

Science News Letter, November 23, 1946

❁ **PANTS GUARD** for bicycle riders not only holds the trousers tight about the ankle in the ordinary way, but has attached reflector buttons which show red under the glare of the headlights of an approaching automobile.

*Science News Letter, November 23, 1946*

**SMALL SIZED** compressor for refrigerators requires only as much space as a quart bottle of milk. The unit, with both motor and pump in a hermetically sealed case, weighs approximately 12 pounds, about one-third the weight of conventional models.

*Science News Letter*, November 23, 1946

⚙ **ELECTRO-ACOUSTIC** device for telephone and radio conversations and



signals is worn under the chin instead of over the head like ordinary telephone receivers. Designed like the doctor's stethoscope, a tiny round microphone is at the junction of the plastic tubes that lead to the ears.

*Science News Letter, November 22, 1946*

**☼ INFRA-RED HEAT LAMP**, now improved with a bulb of hard glass to insure safety and with a ruby-hued filter to reduce glare, fits into any ordinary household socket. While designed for home heat-treatment of aching muscles, it has many other heat applications, such as drying hair.

*Science News Letter*, November 23, 1946

❁ **FIRE FIGHTING** equipment, for use when airplanes crash, is mounted on a jeep and contains, in addition to ordinary tools, a powered circular saw and a powered push-pull back saw, both for use in cutting into the metal fuselage. A powerful winch operates a grappling hook.

*Science News Letter, November 23, 1946*

**★ STAR FINDER**, a simple instrument for amateur astronomers, is designed on the same principle as the equatorial mounting of the astronomer's telescope. It can be mounted on any standard camera tripod. With it, students can locate and identify constellations and stars.

*Science News Letter, November 23, 1946*

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 338. To receive this Gadget Bulletin without special request each week, remit \$1.50 for one year's subscription.

## Question Box

## ANTHROPOLOGY

What is the fundamental American food?  
p. 334.

## CHEMISTRY

What will make purified water in GI can-  
teens taste better than it used to? p. 324.

## ENGINEERING

For what purpose does the Navy use miniature ships? p. 330.

## MEDICINE

How can "blue babies" be saved? p. 327.  
How is some heart disease treated by grafting? p. 335.

What causes death of babies that is blamed on suffocation? p. 334

## NUTRITION

Is food or vitamins needed to restore the starving? p. 329.

## ORNITHOLOGY

For what are white turkeys being bred?  
p. 326.

## PHYSICS

Of what practical value is man-made snow? p. 325.

## PHYSICS-CHEMISTRY

What nation took the honors in Nobel Prize winners? p. 323.

**PSYCHOLOGY**

Does evidence indicate men or women to be better drivers? p. 323.

How can teachers prevent mental breakdowns? p. 329.

Where published sources are used they are cited.

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